ABSTRACT OF THE DISCLOSURE

A branch portion 101 branches an inputted electrical signal into an in-phase signal and an opposite phase signal which have an opposite relation as to a phase. A first FM laser 104 converts the in-phase signal into an optical frequency-modulated signal (a first optical signal) having a center wavelength $\lambda 1$ and then outputs the resultant signal. A second FM laser 105 converts the opposite phase signal into an optical frequency-modulated signal (a second signal) having a center wavelength $\lambda 2$ and then outputs the resultant signal. The two optical signals are combined and then inputted into an optical-electrical converting portion 106. The optical-electrical converting portion 106 subjects the inputted optical signals to optical heterodyne detection by its square-law detection characteristic, and outputs a beat signal between the two optical signals which is a wide-band FM signal at a frequency corresponding to a wavelength difference $\Delta\lambda (=|\lambda 1-\lambda 2|)$ between the first optical signal and the second optical signal. It is thus possible to increase frequency deviation of the outputted FM signal and thus greatly improve a CNR.